



## **Introduction**

Some people are carriers of disease. These carriers show either no symptoms associated with that disease or only mild symptoms. At some point they may eventually get sick. But the danger to others is that a carrier may not be recognized as having the disease. They carry the pathogen inside them, however, and may spread it to people they contact. In this way carriers may spread AIDS, hepatitis, and a number of other diseases. It is one of the reasons AIDS spreads so quickly.

For some diseases, public health officials must identify the original carrier. This person is sometimes referred to as the “Typhoid Mary.” By identifying such a person and finding out who he/she came in contact with, officials learn how the disease is being passed from person to person.

In this lab, one of you will be the original carrier of a “disease.” (This disease is perfectly harmless, if handled properly. You will carry it in a test tube, rather than in your body.) The original carrier will make contact with several students in the class who will then make contact with others. Then all students will be tested to see who has become infected.

## **Purpose**

In this lab you will show how a disease may spread throughout a group of people.

## **Pre-Lab Discussion**

Acids and bases are very often colorless solutions. Strong acids and bases can give very bad burns especially to exposed membranes such as those of the eyes. They can eat through clothing and damage furniture. Therefore, strong acids and bases should be properly labeled. (The acids and bases you use in this lab are relatively mild and pose little harm unless they get in your eyes or mouth.)

Phenol red is a pH indicator. It changes colors depending upon whether the solution it is added to is an acid or a base. If phenol red is added to an acid, the solution will be yellow. If it is added to a base, the solution will be red.

# **SAFETY PRECAUTIONS**

**Do not allow acids and bases to come into contact with your skin or clothing.**

## **Method**

1. Choose a test tube from those to be used by your group.
2. Remove one pipette full of solution from your test tube. Then do the following:
  - Draw up solution from your test tube into your pipette
  - Choose someone at random from your group; wait until the instructor tells the group to exchange fluids
  - Empty your pipette into your contact's test tube as he/she does the same from you.
  - Gently mix your test tube solution by stirring with your pipette.
  - In the data table on the next page. Write down the name of the person with whom you exchanged solutions under Round 1.
3. Repeat Step 2 twice more (Rounds 2 and 3), each time with a different contact. Carefully follow the instructor's directions. It is important everyone in the group has a different contact before you exchange fluids.
4. When you have exchanged solutions with three different contacts, add one drop of phenol red to your test tube to see if you are infected with the "disease." Two test results are possible:
  - Solution turns red!! – You have the disease!
  - Solution turns yellow – You are not infected. (Whew!)
5. Complete the class data table on the next page using information from others in your group.

## **Cleanup Instructions:**

- Wash all pipettes and test tubes with soap and water. Rinse thoroughly and leave to dry.
- Return all stock solutions and the phenol red to the lab counter.

## **Conclusions:**

1. Using an asterisk (\*), mark those students' names in the data table whose test-tube solutions tested positive (red).
2. Trace the transmission of the "disease" to each student testing positive. Can you determine who the original carrier was?

## **Challenge Questions and Extensions:**

1. If someone suspected they had a disease such as AIDS, who in the health care system would they see first? Second? Third?
2. What infectious diseases are prevalent in South Dakota? How does the SD Department of Health track these diseases?

